

1

2 **PLASMA ENHANCED ALD OF TANTALUM NITRIDE AND BILAYER**

3

4 **ABSTRACT OF THE INVENTION**

5

6 A method to deposit TaN by plasma enhanced layer
7 with various nitrogen content. Using a mixture of
8 hydrogen and nitrogen plasma, the nitrogen content in
9 the film can be controlled from 0 to $N/Ta = 1.7$. By
10 turning off the nitrogen flow during deposition of TaN,
11 a TaN/Ta bilayer is easily grown, which has copper
12 diffusion barrier properties superior to those of a
13 single Ta layer or a single TaN layer.